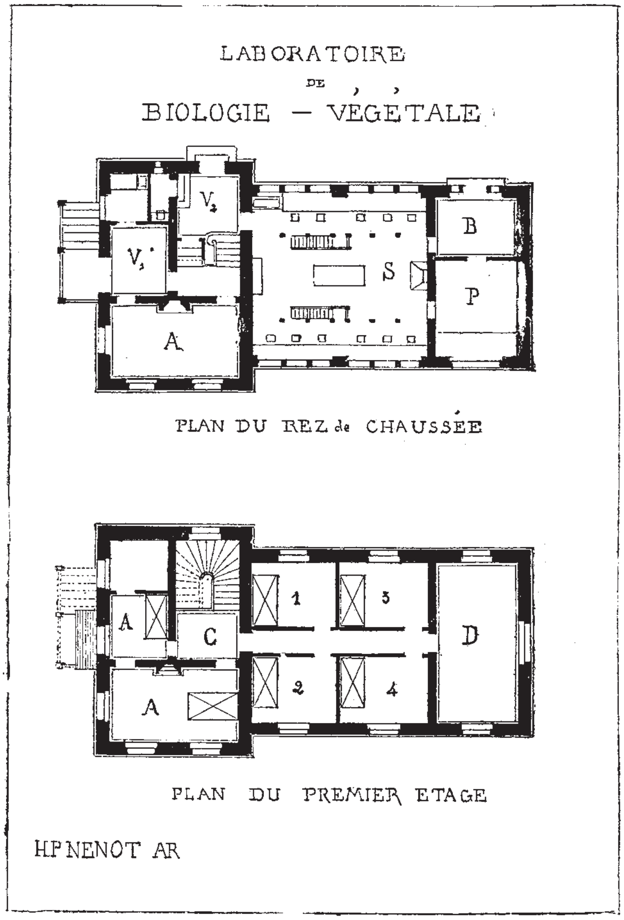
and with the Administration of Forests; and the occupiers of neighbouring estates have placed their resources at the disposal of the director.

In addition to the Laboratory at Fontainebleau, a new one is also being built at the Sorbonne itself, with a large lecture-room, galleries for collections, a library, a greenhouse, a photographic room, and twelve work-rooms.



Figs. 2, 3.—Ground floor: V V, vestibules; S, hall for research; P, Director's laboratory; B, library. First floor: C, landing: D, 1, 2, 3, 4, chambers for students; A A, rooms of the director of cultures.

The Director of the Laboratory at Fontainebleau offers a cordial invitation to foreign botanists who may desire to avail themselves of the facilities for work afforded by it.

BENJAMIN FRANKLIN.

THE Official Report, issued by the American Philosophical Society, of the celebration of the centennial anniversary of the death of Benjamin Franklin, April 17, 1890, has just been sent to us. The Society, in January last, held a stated meeting, at which it was resolved to form a Committee of five members, to be appointed by the President, who should be empowered to take all necessary action. The following was the form of the resolution that was drawn up by the Committee:—"That we commemorate in a becoming way the approaching centennial anniversary of the death of Benjamin Franklin, and that a series of short addresses upon his life, character, and work be delivered before the Society upon this occasion."

The Society is to be congratulated on the success with which the idea was carried out. It is right that the world, on fitting occasions, should be reminded of the achievements of so great an investigator. Franklin had all the qualities of mind which are necessary for the extension of knowledge by means of observation and experiment, and his career marked one of the most important stages in the development of science. Englishmen regard his work with hardly less pride than Americans, and the memory of what he accomplished must always be one of the links that serve to unite the two peoples.

In the evening of the anniversary day, members and their guests assembled at the Association Hall in the city of Philadelphia. Mr. Talcott Williams began the proceedings with a few remarks on the occasion of the gathering. He then informed the audience that the Society had summoned the biographer of Franklin; it had called upon the historian of the land in which he served his country, upon the man of science, upon one who was both the man of science and of letters, and lastly upon the President of the Society, to represent the civic and associated activities in which Franklin was engaged.

In the following notes we shall give brief extracts from some of the speeches that were delivered. Franklin, the youngest son of a family of seventeen, began his career at Boston. He wished to go to sea, but his mother thought it would be better for him to become a minister. His father, having tried hard to make him a tradesman, bound him over to an elder brother to learn printing. The apprenticeship did not last long, as the brothers disagreed, and what with insults, quarrels, and blows, they parted—"the one to drag out a humble existence, the other to become the most illustrious American of his day." Travelling about looking for work, Franklin came across William Keith, who sent him to Boston, and then to London. On reaching the latter place he found out that "Keith was a knave, and himself a dupe." During his stay in London he wasted his substance, misused money, and kept bad company; but after some time he made the acquaintance of a merchant, who gave him a situation. Going back to Philadelphia with him, he commenced to "keep books, sell goods, and learn the secrets of mercantile affairs." Owing to the death of the merchant, Franklin was once more at large, and this time, with the help of a friend, he set up a "new printing office in High Street near the market."

From that hour he prospered, bought out his partner, married, founded one of the best newspapers, published the famous almanac, and was made Postmaster-General. Having now become wealthy by a strict adherence to the maxims of "Poor Richard," he sold his shop, newspaper, &c., and gave his time to the study of science. Before he had reached the age of fifty he had won for himself the Copley Medal, and membership of the Royal Society.

He now dropped scientific studies and returned to politics, and was loaded with public duties. Among other things he was appointed Postmaster-General of the Colonies, sent by the Assembly with its Speaker to hold a conference with the Indians at Carlisle, and then to the Albany Conference, where he presented his famous plan of union. On his return to Philadelphia in 1761, his intention was to settle down again and study, but he was again drawn into politics by the conspiracy of Pontiac, and the massacre of the Conestoga Indians by the men of Donegal and Paxtang.

After this he wrote many articles on American affairs for the English newspapers, and it was about this time that he republished a London edition of the "Famous Letters," and brought out "The Votes and Proceedings of the Freeholders and other Inhabitants of

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Boston"; he also sent over the "Hutchinson Letters," and underwent the memorial examination before the Privy Council.

Having been abroad ten years and six months, he turned his face homewards, and found that great changes had taken place; the city had grown considerably, and the people were more prosperous. The greatest change seems to have occurred in his family; his wife was dead, his daughter married, and his son estranged in politics. Luckily, Franklin was soon absorbed again in public affairs, so that he had no time to consider his misfortunes.

The day after he landed, he "was chosen a member of the Continental Congress, took his seat four days later, and served for 14 months; was on eleven committees, was made Postmaster-General; was sent on one mission to Washington at Cambridge, and on another to Arnold at Quebec; was despatched after the disastrous battle of Long Island, to confer with Lord Howe; and in September 1776, was sent out to join Arthur Lee and Silas Diane in France."

There he was received with great enthusiasm, and "became the sensation of the hour." He concluded the treaty of alliance with France, the treaty of amity and commerce, negotiated loans for great sums of money, and in 1783 signed the treaty of peace with Great Britain.

In 1785, old and loaded with honours, he returned to Philadelphia. Here he was made a Member of Council, and the Council and Assembly made him President of the State, and while holding this office he was sent to the Convention that framed the Constitution of the United States. It was about this time that his fame was at its highest, and everyone honoured and looked up to "the venerable Dr. Franklin, our illustrious countryman and friend of man," "the father of American independence." The closing years of his life were passed among his friends and admirers, and he died on April 17, 1790.

The epitaph that was placed over his tomb was written by himself, and is quite worth repeating:—

"The body
of
BENJAMIN FRANKLIN,
Printer
(like the cover of an old book,
its contents torn out,
and stript of its lettering and gilding),
lies here food for worms.
Yet the work itself shall not be lost;
for it will, as he believed, appear once more
in a new
and more beautiful edition
corrected and amended
by
The Author."

Franklin was a voluminous writer, and wrote with expression. To use the words of Mr. Brown Goode, who spoke on "the literary labours of Benjamin Franklin," "he wrote habitually with a single eye to immediate practical results. He never posed for posterity. Of all the writings to which he mainly owes his present fame, it would be difficult to name one which he gave to the press himself or of which he saw the proof. Yet he never wrote a dull line, nor many which the century of time has robbed of their interest or value."

The literary remains of Franklin may be classified as follows:—

(1) "The Autobiography," from 1706–57.

(2) "Poor Richard's Almanac," in twenty-six annual issues, 1732–58, culminating in "Father Abraham's Speech at the Auction."

(3) Essays upon manners, morals, and the science of life, including the so-called "Bagatelles"; in all sixty titles or more.

(4) Tracts and papers upon political economy, finance, and the science of government; in all about forty titles.

(5) Essays and tracts, historical and political, concerning the American Revolution and the events which immediately preceded and followed, 1747–90.

(6) Scientific papers from 1737–90; in all 221 titles, and nearly 900 octavo pages.

(7) Correspondence, diplomatic, domestic, and literary, 1724–90; in all some twelve hundred letters, while many still remain unpublished.

Dr. J. W. Holland gave a very interesting account of the scientific labours of Franklin in the various branches of natural philosophy. Considered in their general character, they fall into a few groups, such as labour in sanitary science, in the art of navigation, in meteorology, and in electricity.

The science of electricity in Franklin's time was in its infancy. The only facts known about it were that some substances could be electrified, that the zigzag sparks which could be drawn from a rude machine resembled the lightning-flash, and that the Leyden jar enabled the experimenter to "imprison the fiery spirit and perform many remarkable tricks with it." Having reached middle age and just retired from business, he set to work with the frictional machine and the jar.

He first formed "a coterie for mutual suggestions and encouragement" with three of his friends who were very interested in these experiments; and between them they made a great advance, constructing their own machines, and making "new demonstrations of attraction and repulsion, and of the power of electricity to produce light, heat, mechanical violence, nervous shock, and even death." As a result of these and other experiments, he invented the lightning-conductor, which at that time was accounted "the most brilliant application of science that had been known," and projected his apt and simple theory of an electric fluid, explaining the cause of positive and negative action, which "held sway for so many years that to this day its nomenclature is retained in spite of defects revealed by recent advances in knowledge."

In concluding these brief extracts, we cannot do better than quote the words of one of the speakers:—

"Such men are few in any age; their number is not great in all the combined centuries that together make up the short life of our race upon this planet. It is only meet that we should cherish their names with respect, and gratefully hand down to posterity the story of their honourable and meritorious deeds."

NOTES ON THE HABITS OF SOME COMMON ENGLISH SPIDERS.

SOME years ago I sent to NATURE (vol. xxiii. p. 149) an account of the behaviour of the common small garden spider when a sounding tuning-fork is brought near. If the fork is made to touch any part of the web, or the twigs or leaves by which the web is supported, the trembling of the web completely deceives the spider, so that, after rapidly finding which radial line is most disturbed, she runs along this one and attempts to secure the tuning-fork. She fails to discover in the cold and polished steel anything different from her usual food; or rather, being led by instinct to eat that which buzzes, she struggles in vain to find a soft place in the armour of her prey.

On the other hand, if the tuning-fork is brought near one of these little spiders while she is waiting in the centre of her web, she generally drops instantly, but will climb up again as quickly as possible if the vibrating fork is made to touch the web.

More recently Mr. and Mrs. Peckham, who have made an elaborate study of the mental powers of spiders (*Journal of Morphology*, vol. i. p. 383), have repeated

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